

SEQUENCE LISTING

<110> Chen, Hongyun
Le Bihan, Stephane

<120> NOVEL ABCG4 TRANSPORTER AND USES THEREOF

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<140> US

<141> 2002-03-01

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<212> DNA

<213> Homo sapiens

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<213> Homo sapiens

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 Cys Ser His Thr Arg Thr Ala Leu Ser Gly Gly Gln Arg Lys Arg
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 Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
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CCDS=GenBank

<213> Homo sapiens

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 625 630 635 640
 Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val Leu Gly Ile Phe Phe Ile
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<213> Homo sapiens

<400> 5

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 Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro Val Glu Lys Glu Ile Leu
 50 55 60
 Ser Asn Ile Asn Gly Ile Met Lys Pro Gly Leu Asn Ala Ile Leu Gly
 65 70 75 80
 Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala Ala Arg

85 90 95
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 Arg Pro Ala Asn Phe Lys Cys Asn Ser Gly Tyr Val Val Gln Asp Asp
 115 120 125
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 130 135 140
 Ala Leu Arg Leu Ala Thr Thr Met Thr Asn His Glu Lys Asn Glu Arg
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 Ile Asn Arg Val Ile Glu Glu Leu Gly Leu Asp Lys Val Ala Asp Ser
 165 170 175
 Lys Val Gly Thr Gln Phe Ile Arg Gly Val Ser Gly Gly Glu Arg Lys
 180 185 190
 Arg Thr Ser Ile Gly Met Glu Leu Ile Thr Asp Pro Ser Ile Leu Ser
 195 200 205
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 Leu Leu Leu Leu Lys Arg Met Ser Lys Gln Gly Arg Thr Ile Ile Phe
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 Ser Ile His Gln Pro Arg Tyr Ser Ile Phe Lys Leu Phe Asp Ser Leu
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 Thr Leu Leu Ala Ser Gly Arg Leu Met Phe His Gly Pro Ala Gln Glu
 260 265 270
 Ala Leu Gly Tyr Phe Glu Ser Ala Gly Tyr His Cys Glu Ala Tyr Asn
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 Asn Pro Ala Asp Phe Phe Leu Asp Ile Ile Asn Gly Asp Ser Thr Ala
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 Val Ala Leu Asn Arg Glu Glu Asp Phe Lys Ala Thr Glu Ile Ile Glu
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 Pro Ser Lys Gln Asp Lys Pro Leu Ile Glu Lys Leu Ala Glu Ile Tyr
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 Val Asn Ser Ser Phe Tyr Lys Glu Thr Lys Ala Glu Leu His Gln Leu
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 Ser Gly Gly Glu Lys Lys Lys Lys Ile Thr Val Phe Lys Glu Ile Ser
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 Tyr Thr Thr Ser Phe Cys His Gln Leu Arg Trp Val Ser Lys Arg Ser
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 Lys Asn Asp Ser Thr Gly Ile Gln Asn Arg Ala Gly Val Leu Phe Phe
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 Met Arg Met Leu Pro Ser Ile Ile Phe Thr Cys Ile Val Tyr Phe Met
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His	Arg	Val	Arg 50	Pro	Trp	Trp 55	Asp	Ile	Thr	Ser	Cys 60	Arg	Gln	Gln	Trp
Thr 65	Arg	Gln	Ile	Leu	Lys 70	Asp	Val	Ser	Leu	Tyr 75	Val	Glu	Ser	Gly 80	Gln
Ile	Met	Cys	Ile 85	Leu	Gly	Ser	Ser	Gly 90	Ser	Gly	Lys	Thr	Thr 95	Leu	Leu
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Val	Tyr	Val	Asn 115	Gly	Arg	Ala	Leu 120	Arg	Arg	Glu	Gln	Phe 125	Gln	Asp	Cys
Phe	Ser	Tyr	Val 130	Leu	Gln	Ser 135	Asp	Thr	Leu	Leu	Ser 140	Ser	Leu	Thr	Val
Arg 145	Glu	Thr	Leu	His 150	Tyr	Thr	Ala	Leu	Leu	Ala 155	Ile	Arg	Arg	Gly 160	Asn
Pro	Gly	Ser	Phe 165	Gln	Lys	Lys	Val	Glu 170	Ala	Val	Met	Ala	Glu 175	Leu	Ser
Leu	Ser	His	Val 180	Ala	Asp	Arg	Leu 185	Ile	Gly	Asn	Tyr	Ser	Leu 190	Gly	Gly
Ile	Ser	Thr 195	Gly	Glu	Arg	Arg 200	Val	Ser	Ile	Ala 205	Ala	Gln	Leu	Leu	
Gln	Asp 210	Pro	Lys	Val	Met 215	Leu	Phe	Asp	Glu	Pro 220	Thr	Gly	Leu	Asp	
Cys	Met	Thr	Ala	Asn	Gln	Ile	Val	Val	Leu	Leu	Val	Glu	Leu	Ala	Arg

225					230					235					240
Arg	Asn	Arg	Ile	Val	Val	Leu	Thr	Ile	His	Gln	Pro	Arg	Ser	Glu	Leu
				245					250					255	
Phe	Gln	Leu	Phe	Asp	Lys	Ile	Ala	Ile	Leu	Ser	Phe	Gly	Glu	Leu	Ile
			260					265					270		
Phe	Cys	Gly	Thr	Pro	Ala	Glu	Met	Leu	Asp	Phe	Phe	Asn	Asp	Cys	Gly
		275					280					285			
Tyr	Pro	Cys	Pro	Glu	His	Ser	Asn	Pro	Phe	Asp	Phe	Tyr	Met	Asp	Leu
	290					295					300				
Thr	Ser	Val	Asp	Thr	Gln	Ser	Lys	Glu	Arg	Glu	Ile	Glu	Thr	Ser	Lys
305					310					315					320
Arg	Val	Gln	Met	Ile	Glu	Ser	Ala	Tyr	Lys	Lys	Ser	Ala	Ile	Cys	His
				325					330					335	
Lys	Thr	Leu	Lys	Asn	Ile	Glu	Arg	Met	Lys	His	Leu	Lys	Thr	Leu	Pro
			340					345					350		
Met	Val	Pro	Phe	Lys	Thr	Lys	Asp	Ser	Pro	Gly	Val	Phe	Ser	Lys	Leu
		355					360					365			
Gly	Val	Leu	Leu	Arg	Arg	Val	Thr	Arg	Asn	Leu	Val	Arg	Asn	Lys	Leu
	370					375					380				
Ala	Val	Ile	Thr	Arg	Leu	Leu	Gln	Asn	Leu	Ile	Met	Gly	Leu	Phe	Leu
385					390					395					400
Leu	Phe	Phe	Val	Leu	Arg	Val	Arg	Ser	Asn	Val	Leu	Lys	Gly	Ala	Ile
				405					410					415	
Gln	Asp	Arg	Val	Gly	Leu	Leu	Tyr	Gln	Phe	Val	Gly	Ala	Thr	Pro	Tyr
			420					425					430		
Thr	Gly	Met	Leu	Asn	Ala	Val	Asn	Leu	Phe	Pro	Val	Leu	Arg	Ala	Val
		435					440					445			
Ser	Asp	Gln	Glu	Ser	Gln	Asp	Gly	Leu	Tyr	Gln	Lys	Trp	Gln	Met	Met
	450					455					460				
Leu	Ala	Tyr	Ala	Leu	His	Val	Leu	Pro	Phe	Ser	Val	Val	Ala	Thr	Met
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Ile	Phe	Ser	Ser	Val	Cys	Tyr	Trp	Thr	Leu	Gly	Leu	His	Pro	Glu	Val
				485					490					495	
Ala	Arg	Phe	Gly	Tyr	Phe	Ser	Ala	Ala	Leu	Leu	Ala	Pro	His	Leu	Ile
			500					505					510		
Gly	Glu	Phe	Leu	Thr	Leu	Val	Leu	Leu	Gly	Ile	Val	Gln	Asn	Pro	Asn
		515					520					525			
Ile	Val	Asn	Ser	Val	Val	Ala	Leu	Leu	Ser	Ile	Ala	Gly	Val	Leu	Val
	530					535					540				
Gly	Ser	Gly	Phe	Leu	Arg	Asn	Ile	Gln	Glu	Met	Pro	Ile	Pro	Phe	Lys
545					550					555					560
Ile	Ile	Ser	Tyr	Phe	Thr	Phe	Gln	Lys	Tyr	Cys	Ser	Glu	Ile	Leu	Val
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<210> 7
 <211> 673
 <212> PRT
 <213> Homo sapiens

<400> 7

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			20					25					30		
Asp	Asn	Ser	Leu	Tyr	Phe	Thr	Tyr	Ser	Gly	Gln	Pro	Asn	Thr	Leu	Glu
		35					40					45			
Val	Arg	Asp	Leu	Asn	Tyr	Gln	Val	Asp	Leu	Ala	Ser	Gln	Val	Pro	Trp
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Phe	Glu	Gln	Leu	Ala	Gln	Phe	Lys	Met	Pro	Trp	Thr	Ser	Pro	Ser	Cys
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Gln	Asn	Ser	Cys	Glu	Leu	Gly	Ile	Gln	Asn	Leu	Ser	Phe	Lys	Val	Arg
				85					90					95	
Ser	Gly	Gln	Met	Leu	Ala	Ile	Ile	Gly	Ser	Ser	Gly	Cys	Gly	Arg	Ala
			100					105					110		
Ser	Leu	Leu	Asp	Val	Ile	Thr	Gly	Arg	Gly	His	Gly	Gly	Lys	Ile	Lys
		115					120					125			
Ser	Gly	Gln	Ile	Trp	Ile	Asn	Gly	Gln	Pro	Ser	Ser	Pro	Gln	Leu	Val
	130					135					140				
Arg	Lys	Cys	Val	Ala	His	Val	Arg	Gln	His	Asn	Gln	Leu	Leu	Pro	Asn
145					150					155					160
Leu	Thr	Val	Arg	Glu	Thr	Leu	Ala	Phe	Ile	Ala	Gln	Met	Arg	Leu	Pro
				165					170					175	
Arg	Thr	Phe	Ser	Gln	Ala	Gln	Arg	Asp	Lys	Arg	Val	Glu	Asp	Val	Ile
			180					185					190		
Ala	Glu	Leu	Arg	Leu	Arg	Gln	Cys	Ala	Asp	Thr	Arg	Val	Gly	Asn	Met
		195					200					205			
Tyr	Val	Arg	Gly	Leu	Ser	Gly	Gly	Glu	Arg	Arg	Arg	Val	Ser	Ile	Gly
	210					215					220				
Val	Gln	Leu	Leu	Trp	Asn	Pro	Gly	Ile	Leu	Ile	Leu	Asp	Glu	Pro	Thr
225					230					235					240
Ser	Gly	Leu	Asp	Ser	Phe	Thr	Ala	His	Asn	Leu	Val	Lys	Thr	Leu	Ser
				245					250					255	
Arg	Leu	Ala	Lys	Gly	Asn	Arg	Leu	Val	Leu	Ile	Ser	Leu	His	Gln	Pro
			260					265					270		
Arg	Ser	Asp	Ile	Phe	Arg	Leu	Phe	Asp	Leu	Val	Leu	Leu	Met	Thr	Ser
		275					280					285			
Gly	Thr	Pro	Ile	Tyr	Leu	Gly	Ala	Ala	Gln	His	Met	Val	Gln	Tyr	Phe
	290					295					300				
Thr	Ala	Ile	Gly	Tyr	Pro	Cys	Pro	Arg	Tyr	Ser	Asn	Pro	Ala	Asp	Phe
305					310					315					320
Tyr	Val	Asp	Leu	Thr	Ser	Ile	Asp	Arg	Arg	Ser	Arg	Glu	Gln	Glu	Leu
				325					330					335	
Ala	Thr	Arg	Glu	Lys	Ala	Gln	Ser	Leu	Ala	Ala	Leu	Phe	Leu	Glu	Lys
			340					345					350		
Val	Arg	Asp	Leu	Asp	Asp	Phe	Leu	Trp	Lys	Ala	Glu	Thr	Lys	Asp	Leu
		355					360					365			
Asp	Glu	Asp	Thr	Cys	Val	Glu	Ser	Ser	Val	Thr	Pro	Leu	Asp	Thr	Asn

370 375 380
 Cys Leu Pro Ser Pro Thr Lys Met Pro Gly Ala Val Gln Gln Phe Thr
 385 390 395 400
 Thr Leu Ile Arg Arg Gln Ile Ser Asn Asp Phe Arg Asp Leu Pro Thr
 405 410 415
 Leu Leu Ile His Gly Ala Glu Ala Cys Leu Met Ser Met Thr Ile Gly
 420 425 430
 Phe Leu Tyr Phe Gly His Gly Ser Ile Gln Leu Ser Phe Met Asp Thr
 435 440 445
 Ala Ala Leu Leu Phe Met Ile Gly Ala Leu Ile Pro Phe Asn Val Ile
 450 455 460
 Leu Asp Val Ile Ser Lys Cys Tyr Ser Glu Arg Ala Met Leu Tyr Tyr
 465 470 475 480
 Glu Leu Glu Asp Gly Leu Tyr Thr Thr Gly Pro Tyr Phe Phe Ala Lys
 485 490 495
 Ile Leu Gly Glu Leu Pro Glu His Cys Ala Tyr Ile Ile Ile Tyr Gly
 500 505 510
 Met Pro Thr Tyr Trp Leu Ala Asn Leu Arg Pro Gly Leu Gln Pro Phe
 515 520 525
 Leu Leu His Phe Leu Leu Val Trp Leu Val Val Phe Cys Cys Arg Ile
 530 535 540
 Met Ala Leu Ala Ala Ala Ala Leu Leu Pro Thr Phe His Met Ala Ser
 545 550 555 560
 Phe Phe Ser Asn Ala Leu Tyr Asn Ser Phe Tyr Leu Ala Gly Gly Phe
 565 570 575
 Met Ile Asn Leu Ser Ser Leu Trp Thr Val Pro Ala Trp Ile Ser Lys
 580 585 590
 Val Ser Phe Leu Arg Trp Cys Phe Glu Gly Leu Met Lys Ile Gln Phe
 595 600 605
 Ser Arg Arg Thr Tyr Lys Met Pro Leu Gly Asn Leu Thr Ile Ala Val
 610 615 620
 Ser Gly Asp Lys Ile Leu Ser Val Met Glu Leu Asp Ser Tyr Pro Leu
 625 630 635 640
 Tyr Ala Ile Tyr Leu Ile Val Ile Gly Leu Ser Gly Gly Phe Met Val
 645 650 655
 Leu Tyr Tyr Val Ser Leu Arg Phe Ile Lys Gln Lys Pro Ser Gln Asp
 660 665 670
 Trp

<210> 8
 <211> 627
 <212> PRT
 <213> Homo sapiens

<400> 8
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 His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln Arg Phe Ser
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 His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val Glu Leu Ser
 35 40 45
 Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly Tyr Lys Thr

50 55 60
 Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu Leu Ile Gly
 65 70 75 80
 Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met Asn Ile Leu
 85 90 95
 Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu Val Asn Gly
 100 105 110
 Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys Tyr Ile Met
 115 120 125
 Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu Ala Met Met
 130 135 140
 Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val Lys Lys Glu
 145 150 155 160
 Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser Cys Ser His
 165 170 175
 Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile
 180 185 190
 Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro
 195 200 205
 Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met
 210 215 220
 Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr Ile His Gln
 225 230 235 240
 Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr Ile Leu Ser
 245 250 255
 Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu Ile Pro Tyr
 260 265 270
 Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn Pro Ala Asp
 275 280 285
 Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu Asn Pro Met
 290 295 300
 Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala Glu Lys Lys
 305 310 315 320
 Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro Pro Cys Pro
 325 330 335
 Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr Ser Thr Leu
 340 345 350
 Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile Leu Arg
 355 360 365
 Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val Val Ile Gly
 370 375 380
 Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp Ala Ser Lys
 385 390 395 400
 Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu Phe Leu Met
 405 410 415
 Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu Met Ala
 420 425 430
 Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys Ala Tyr
 435 440 445
 Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val Val Cys Pro
 450 455 460
 Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln Pro Ala Glu
 465 470 475 480
 Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala Thr Ala Leu

485 490 495
 Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser Asn Ser Leu
 500 505 510
 Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val Leu Leu
 515 520 525
 Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr Tyr Leu Gln
 530 535 540
 Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu Gly Val Ile
 545 550 555 560
 Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys Leu Glu Glu
 565 570 575
 Arg Cys Pro Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala Leu Asp Val
 580 585 590
 Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly Ile Phe Phe
 595 600 605
 Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr Arg Val Lys
 610 615 620
 Ser Glu Arg
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<212> PRT

<213> Homo sapiens

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Gly Pro Ser Gly Ala Gly Lys Ser Thr

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5

<210> 10

<211> 7

<212> PRT

<213> Homo sapiens

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Leu Ser Gly Gly Gln Arg Lys

1

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<210> 11

<211> 8

<212> PRT

<213> Homo sapiens

<400> 11

Val Met Phe Phe Asp Glu Pro Thr

1

5

<210> 12

<211> 2687

<213> Homo sapiens

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tggagtagcg	ggcggaaacc	cctgtgctga	ccacgcacct	gaagaagggtg	gagaaccaca	180
tcactgaagc	ccagcgcttc	tcccacctac	ccaagcgctc	agccgtggac	atcgagttcg	240
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acacctttgc	caccagcacc	ctcacacagt	tctgcacct	cttcaagagg	accttctgt	1200
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<213> Homo sapiens

<220>
 <221> VARIANT
 <222> 579, 598
 <223> Xaa = Any Amino Acid

<400> 13

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			20					25					30		
Leu	Thr	Thr	His	Leu	Lys	Lys	Val	Glu	Asn	His	Ile	Thr	Glu	Ala	Gln
			35				40					45			
Arg	Phe	Ser	His	Leu	Pro	Lys	Arg	Ser	Ala	Val	Asp	Ile	Glu	Phe	Val
	50					55					60				
Glu	Leu	Ser	Tyr	Ser	Val	Arg	Glu	Gly	Pro	Cys	Trp	Arg	Lys	Arg	Gly
65					70					75					80
Tyr	Lys	Thr	Leu	Leu	Lys	Cys	Leu	Ser	Gly	Lys	Phe	Cys	Arg	Arg	Glu
				85					90					95	
Leu	Ile	Gly	Ile	Met	Gly	Pro	Ser	Gly	Ala	Gly	Lys	Ser	Thr	Phe	Met
			100					105					110		
Asn	Ile	Leu	Ala	Gly	Tyr	Arg	Glu	Ser	Gly	Met	Lys	Gly	Gln	Ile	Leu
		115					120					125			
Val	Asn	Gly	Arg	Pro	Arg	Glu	Leu	Arg	Thr	Phe	Arg	Lys	Met	Ser	Cys
	130					135					140				
Tyr	Ile	Met	Gln	Asp	Asp	Met	Leu	Leu	Pro	His	Leu	Thr	Val	Leu	Glu
145					150					155					160
Ala	Met	Met	Val	Ser	Ala	Asn	Leu	Lys	Leu	Ser	Glu	Lys	Gln	Glu	Val
				165					170					175	
Lys	Lys	Glu	Leu	Val	Thr	Glu	Ile	Leu	Thr	Ala	Leu	Gly	Leu	Met	Ser
			180					185					190		
Cys	Ser	Arg	Thr	Arg	Thr	Ala	Leu	Leu	Ser	Gly	Gly	Gln	Arg	Lys	Arg
		195					200					205			
Leu	Ala	Ile	Ala	Leu	Glu	Leu	Val	Asn	Asn	Pro	Pro	Val	Met	Phe	Phe
	210					215					220				
Asp	Glu	Pro	Thr	Ser	Gly	Leu	Asp	Ser	Ala	Ser	Cys	Phe	Gln	Val	Val
225					230				235						240
Ser	Leu	Met	Lys	Ser	Leu	Ala	Gln	Gly	Gly	Arg	Thr	Ile	Ile	Cys	Thr
				245					250					255	
Ile	His	Gln	Pro	Ser	Ala	Lys	Leu	Phe	Glu	Met	Phe	Asp	Lys	Leu	Tyr
			260					265					270		
Ile	Leu	Ser	Gln	Gly	Gln	Cys	Ile	Phe	Lys	Gly	Val	Val	Thr	Asn	Leu
	275						280					285			
Ile	Pro	Tyr	Leu	Lys	Gly	Leu	Gly	Leu	His	Cys	Pro	Thr	Tyr	His	Asn
	290					295					300				
Pro	Ala	Asp	Phe	Ile	Ile	Glu	Val	Ala	Ser	Gly	Glu	Tyr	Gly	Asp	Leu
305					310					315					320
Asn	Pro	Met	Leu	Phe	Arg	Ala	Val	Gln	Asn	Gly	Leu	Cys	Ala	Met	Ala
				325					330					335	
Glu	Lys	Lys	Ser	Ser	Pro	Glu	Lys	Asn	Glu	Val	Pro	Ala	Pro	Cys	Pro
			340					345					350		
Pro	Cys	Pro	Pro	Glu	Val	Asp	Pro	Ile	Glu	Ser	His	Thr	Phe	Ala	Thr
		355					360					365			
Ser	Thr	Leu	Thr	Gln	Phe	Cys	Ile	Leu	Phe	Lys	Arg	Thr	Phe	Leu	Ser

370 375 380
 Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val
 385 390 395 400
 Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp
 405 410 415
 Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu
 420 425 430
 Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
 435 440 445
 Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
 450 455 460
 Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val
 465 470 475 480
 Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln
 485 490 495
 Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala
 500 505 510
 Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
 515 520 525
 Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
 530 535 540
 Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr
 545 550 555 560
 Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu
 565 570 575
 Gly Val Xaa Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys
 580 585 590
 Leu Glu Glu Arg Cys Xaa Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala
 595 600 605
 Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly
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 Ile Phe Phe Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr
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